Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of Update to Parts 2 and 25 Concerning Non-Geostationary, Fixed-Satellite Service Systems and Related Matters	)))))	IB Docket No. 16-408

COMMENTS OF TELESAT CANADA ON THE PETITION FOR RECONSIDERATION OF WORLDVU SATELLITES LIMITED

Telesat Canada ("Telesat"), pursuant to Section 1.429 of the Commission's rules, hereby submits its comments on the Petition for Reconsideration of WorldVu Satellites Limited, d/b/a OneWeb ("OneWeb") in the above-captioned proceeding (the "Petition"). The Petition requests the Commission to reconsider its decision to require band-splitting when the change in system noise temperature caused by interference between two NGSO systems ($\Delta T/T$) exceeds 6 percent, and to adopt in place of this requirement, international filing date priority as the mechanism for spectrum sharing absent a coordination agreement between operators. As discussed more fully below, Telesat supports this request.

I. INTRODUCTION

In the NGSO Report and Order[1], the Commission determined that good faith negotiations between NGSO FSS operators provide the best opportunity for spectrum sharing. Should, however, operators be unable to reach a coordination agreement, the Commission required them

[1] *In re Update to Parts 2 and 25 Concerning Non-Geostationary, Fixed-Satellite Service Systems and Related Matters, Report and Order and Notice of Proposed Rulemaking*, 32 FCC Rcd 7809 (2017) (the "NGSO R&O").

to split spectrum when the ΔT/T of an interfered link exceeds 6 percent.[2] The Commission indicated that OneWeb had identified this ΔT/T threshold in the proceeding as a mechanism for assessing interference.[3]

OneWeb has proposed that ΔT/T be used as a trigger to determine when operators must engage in coordination negotiations, but not as a mechanism to address unresolved coordination issues. Rather, the obligation to protect the other system from interference would be determined by international filing date priority (as established by the relevant provisions of the International Radio Regulations), if operators are unable to reach a coordination agreement.

Telesat concurs with OneWeb that reliance on international filing date priority rather than band-splitting as a backstop to address unsuccessful coordination discussions will provide needed certainty to all NGSO operators regarding the spectrum that will be available to them, and will encourage investment in new NGSO constellations with efficient designs that mitigate interference.

II. RELIANCE ON INTERNATIONAL FILING PRIORITY WILL PROMOTE THE COMMISSION'S OBJECTIVES OF ENCOURAGING INVESTMENT AND ADOPTION OF DESIGNS THAT MITIGATE INTERFERENCE

As noted by OneWeb, the implementation of an NGSO system is a complex, costly and risky undertaking. Moreover, certainty regarding access to spectrum is essential to assessment of the business case for the undertaking. By introducing unpredictability into the amount of spectrum that will be available to an NGSO system, the band-splitting rule adopted in the NGSO

[2] Ibid, paras. 48 and 49.

[3] Ibid, para. 47.

R&O significantly increases the risk of an NSGO system business plan and discourages the substantial investment that is required to implement these systems.

In contrast, the approach proposed by OneWeb relies on $\Delta T/T$ solely as a trigger for coordination, and does not rely on band-splitting as a method for resolving coordination issues. Operators must engage in good faith negotiations to resolve coordination issues and, if they are unable to do so, international filing date priority determines the obligations of operators to protect other systems from interference. Under this approach, all operators have an incentive to design their systems to mitigate interference with prior filed systems and, if they do so, have certainty that they will have continued access to the spectrum for which their systems have been designed and that they need to operate efficiently.

III. HARMONIZATION OF U.S. AND INTERNATIONAL RULES WILL FACILITATE COORDINATION OF NGSO SYSTEMS

International date priority and processes defined by the International Radio Regulations have a long and successful track record of facilitating coordination between GSO systems, and there is no apparent reason why these rules will not be equally effective in resolving coordination between NSGO systems. As is the case for GSOs, the application of international filing date priority to determine the obligations of NSGO operators to protect NGSO systems from interference when there is no coordination agreement would also harmonize the U.S. and international approach to coordination. As NGSO systems are inherently global, this harmonization would allow operators to address coordination on a consistent, global basis.

IV. SPECIFICATION OF A ΔT/T COORDINATION TRIGGER AND ITS APPLICATION

Telesat supports the use of ΔT/T as a trigger for coordination between NGSO systems, as proposed by OneWeb. However, given the complexity of the ΔT/T calculation for NGSO systems, the trigger and its application would need to be specified clearly by the Commission.

In order to capture the potential for harmful interference, coordination between any two NGSO systems must consider each potential victim satellite and each potential victim earth station. To satisfy this requirement, a coordination trigger based on ΔT/T must be specified as follows:

> Coordination between two NSGO systems is not necessary only if, for each potential victim satellite or earth station, the ΔT/T caused by all aggregate sources of interference from the interfering NGSO system falls below the value of 6%, 100% of the time.

To calculate ΔT/T for this purpose, the contributions in both uplink and downlink must be taken into account under the following assumptions:

a) the equivalent noise temperature of the victim earth station and of the victim satellite are as provided by the priority network (in the interim, the values of 250K and 730K, respectively, may be used)

b) a victim receiving satellite is located anywhere within the field of view of any interfering transmitting earth station

c) a victim receiving earth station is located anywhere within the field of view of any interfering transmitting satellite

d) when computing the interference caused by any interfering transmit earth station or interfering transmitting satellite, the interference caused by both the main beam and side lobes of the respective antennas is considered

e) the victim spacecraft antenna gain pattern is as provided by the priority network (in the interim, the reference pattern in the ITU Recommendation ITU-R S.1528 may be used)

f) the victim earth station antenna gain pattern is as provided by the priority network (in the interim, the reference pattern in the ITU Recommendation ITU-R S.1428 may be used).

This specification and rules of application would need to be adopted by the Commission as part of a decision establishing $\Delta T/T$ as a trigger for coordination between NGSO operators.

V. CONCLUSION

For these reasons, Telesat supports OneWeb's request that the Commission reconsider and replace the band-splitting rule adopted in the NGSO R&O with international filing date priority to determine the obligations of NGSO operators to protect other NGSO systems from interference in the absence of a coordination agreement. This approach, which has served the GSO industry well for many decades, would provide important certainty to all NGSO operators

on the spectrum available for their systems, and encourage later applicants to design their systems to minimize interference with earlier-filed systems. Finally, should the Commission decide to adopt a $\Delta T/T$ coordination trigger for NGSO systems, the trigger and its application would need to be defined by the Commission as set out above.

Respectfully submitted,

TELESAT CANADA

/s/
Leslie Milton
Senior Counsel, Regulatory Affairs
1601 Telesat Court
Ottawa, Ontario
Canada, K1B 5P4
(613) 748-8700

Of Counsel:
Henry Goldberg
Joseph A. Godles
Goldberg, Godles, Wiener & Wright LLP
1025 Connecticut Avenue
Suite 1000
Washington, DC 20036
(202) 429-4900

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CERTIFICATE OF SERVICE

I hereby certify that on this 20th day of February, 2018, a copy of the foregoing Comments of Telesat Canada was sent by first-class, United States mail to the following:

Brian D. Weimer
Douglas A. Svor
Ashley Yeager
Sheppard Mullin Richter & Hampton LLP
2099 Pennsylvania Ave. NW, Suite 100
Washington DC 20006

Mariah Shuman
Senior Director, Regulator Affairs
WorldVu Satellites Limited
1400 Key Boulevard, Suite A1
Arlington, VA 22209

/s/ Vicki Taylor